

MATERIAL SAFETY DATA SHEET

DATE PREPARED: 09/27/1996

MSDS No: 6074

ORTHO® Dursban® Lawn Insect Spray 1

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ORTHO® Dursban® Lawn Insect Spray 1**PRODUCT DESCRIPTION:** Insecticide**MANUFACTURER**

The SOLARIS Group
of Monsanto Company
P.O. Box 5008
San Ramon, CA 94583-0808

**24 HR. EMERGENCY
TELEPHONE NUMBERS****Emergency Phone:** 800-225-2883**EPA REG. NO.:** 239-2633A **PN:** 6022

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>Wt.%</u>	<u>CAS#</u>
Chlorpyrifos	4.38	2921-88-2
INERT INGREDIENTS	~95.62	

"Inert Ingredients" is a term defined by the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act (40 CFR 158.153). It refers to any substance, other than an active ingredient, which is intentionally added to a pesticide product. Some inert ingredients may be hazardous chemicals, as defined by the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200). The hazards associated with these inert ingredients have been included in this document.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW**IMMEDIATE CONCERNS:** - HARMFUL IF SWALLOWED

- CAUSES MODERATE EYE IRRITATION
- AVOID CONTACT WITH EYES OR CLOTHING
- KEEP OUT OF REACH OF CHILDREN

POTENTIAL HEALTH EFFECTS

EYES: The undiluted product may be moderately irritating to the eyes. Eye contact may include discomfort, tearing, swelling, redness, and blurred vision. Read the Toxicology Information section (11) for more information.

SKIN: The undiluted product is considered a slight skin irritant. Skin irritation may include discoloration, itching and swelling. This substance is slightly toxic to internal organs if absorbed through the skin. The degree of injury will depend on the amount absorbed. See Toxicological Information, section 11.

INGESTION: This substance is slightly toxic to internal organs if swallowed. The degree of injury will depend on the amount absorbed from the gut. See Toxicological Information, section 11.

INHALATION: If inhaled, this substance is considered practically non-toxic to internal organs. This substance may be irritating if inhaled. See Toxicological Information, section 11.

TARGET ORGANS: Chlorpyrifos is an inhibitor of the cholinesterase enzyme, found in nervous tissue, red blood cells, and plasma.

COMMENTS HEALTH: Depending upon the extent and degree of overexposure to the product, signs and symptoms of cholinesterase inhibition can result following either ingestion, skin contact or inhalation routes of exposure. Signs and symptoms of cholinesterase inhibition can result from either acute (one time), subchronic (repeated short-term) and chronic (daily life-time) overexposure to the product.

Signs and symptoms of cholinesterase inhibition usually occur within 12 hours following overexposure. These effects may include, but may not be limited to, headache, dizziness, weakness, nausea, vomiting, diarrhea, constriction of the pupil of the eye, blurred or dark vision, excessive salivation or nasal discharge, profuse sweating and abdominal cramps. Incontinence, unconsciousness, convulsions and breathing difficulties are indicative of severe poisoning. In untreated severe poisoning, death is due to respiratory failure or cardiac arrest.

4. FIRST AID MEASURES

EYES: Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN: If on skin, remove contaminated clothing, wash skin with plenty of soap and water.

Wash contaminated clothing before reuse.

INGESTION: If swallowed call a physician or poison control center: (800) 454-2333. Drink 1 or 2 glasses of water and induce vomiting. Do not induce vomiting or give anything by mouth to an unconscious person.

INHALATION: Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required. If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

NOTES TO PHYSICIAN: This material contains a cholinesterase inhibitor. Measurement of blood cholinesterase activity may be useful in monitoring exposure. If signs and/or symptoms of cholinesterase inhibition appear, atropine sulfate is antidotal. 2-PAM (PROTOPAM) is also antidotal and may be used in conjunction with atropine but should not be used alone.

ADDITIONAL INFORMATION: Medical Information: Call day or night, 1-800-225-2883.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: >200°F

EXTINGUISHING MEDIA: Alcohol Foam, CO₂, Dry Chemical, Water Fog

HAZARDOUS COMBUSTION PRODUCTS: Exposure to heat or flame may produce hydrogen chloride, ethyl sulfide, diethyl sulfide and nitrogen oxides.

FIRE FIGHTING PROCEDURES: Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Keep containers cool with a water spray. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Soak up spilled material with paper towels and discard in trash.

LARGE SPILL: Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgite, bentonite or other absorbent clays. Collect contaminated absorbent, place in plastic-lined metal drum and dispose of in accordance with instructions provided under Section 13. "DISPOSAL". Thoroughly scrub

floor or other impervious surface with a strong industrial type detergent solution and rinse with water.

For liquid spills that soak into the ground, contact the applicable Federal, State and or County Health Dept. for disposal recommendations. If disposal is required then refer to Section 13 "DISPOSAL" for instructions.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under Section 13 "Disposal". Any recovered spilled liquid should be similarly collected and disposed of.

Do not contaminate water, foodstuffs or feed by storage or disposal.

GENERAL PROCEDURES: Observe all protection and safety precautions when cleaning up spills -- see Section 8. "EXPOSURE CONTROLS/PERSONAL PROTECTION". For help with any spill, leak, fire or exposure involving this material, call day or night (800) 225-2883.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Keep pesticide in original container. Store in a secure, preferably locked, storage area. Protect container from freezing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust systems.

PERSONAL PROTECTION

EYES AND FACE: For application of product in accordance with label instructions, no special eye protection is needed.

Where there is significant potential for eye contact, wear chemical goggles and have eye flushing equipment available.

SKIN: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type of glove for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing is likely. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

RESPIRATORY: Avoid breathing vapor or mist. Use NIOSH/MSHA approved respiratory protection equipment (full facepiece recommended) when airborne exposure limits are exceeded (see below). Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 C.F.R. 1910.134.

For application of product in accordance with label instructions, no special respiratory protection is required.

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200):

<u>Chemical Name</u>	<u>EXPOSURE LIMITS</u>		
	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>ACGIH STEL</u>
Chlorpyrifos	0.2 mg/m3	0.2 mg/m3	None
Dipropylene glycol methyl ether	100 ppm	100 ppm	150 ppm
Aromatic Hydrocarbon	100 ppm	100 ppm	150 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

APPEARANCE: Clear liquid

pH: ~5.1 to 7.5

SOLUBILITY IN WATER: Soluble

DENSITY: 8.46 lbs./gal at 20°C

COMMENTS:

WATER SOLUBILITY: Miscible in water

10. STABILITY AND REACTIVITY

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

CONDITIONS TO AVOID: Avoid contact with heat.

HAZARDOUS DECOMPOSITION: Oxides of carbon and nitrogen

INCOMPATIBLE MATERIALS: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

11. TOXICOLOGICAL INFORMATION

ACUTE

EYES: The results of the rabbit eye irritation study indicate that this product is moderately irritating to eyes with all irritation clearing by day 7. EPA FIFRA toxicity category - III.

DERMAL LD₅₀: Rat = > 5.0 g/kg. EPA FIFRA toxicity category - IV.

SKIN IRRITATION: Rabbit - slightly irritating. EPA FIFRA toxicity category - IV.

ORAL LD₅₀: This product is slightly toxic if ingested. (Rat) LD50 = 2,434 mg/kg. EPA FIFRA Toxicity Category - III.

INHALATION LC₅₀: This product if inhaled is practically nontoxic. 4 hour aerosol inhalation (Rat) LC50 > 4.94 mg/liter/hour. EPA FIFRA toxicity category - IV.

SENSITIZATION: Guinea pig - no evidence of allergic skin reactions.

CARCINOGENICITY:

CARCINOGENICITY COMMENTS: Chlorpyrifos is not considered to be a carcinogen. There were no carcinogenic findings in any of the chronic animal toxicology investigations. The signs of systemic toxicity were primarily due to inhibition of cholinesterase.

Rat 2 year feeding study: The systemic NOEL was 1.0 mg/kg/day while the plasma and brain cholinesterase NOEL was 0.1 mg/kg/day.

Mouse 2 year feeding study: There were no systemic effects noted at the high dose of 2.25 mg/kg/day (NOEL). Cholinesterase was not measured in the study.

Dog 2 year feeding study: The systemic NOEL was 1.0 mg/kg/day while the cholinesterase NOEL's were 0.01, 0.1 and 1.0 mg/kg/day for the plasma, red blood cell and brain cholinesterase, respectively.

NEUROTOXICITY: Chlorpyrifos is not considered to produce organophosphate induced delayed neuropathy. However, certain human anecdotal cases, involving the ingestion of lethal doses of chlorpyrifos, survived because of immediate aggressive antidotal therapy and respiratory support, later developed temporary signs of neuropathy.

Chicken: Dose levels of 100 and 300 mg/kg resulted in 34% and 70% inhibition of brain neurotoxic esterase (NTE), respectively. No neuropathology was conducted.

TERATOGENICITY: Chlorpyrifos is not considered to be a teratogen (a substance that causes birth defects).

Rats: Results of 2 rat teratology studies indicated that there was no evidence of maternal toxicity or developmental effects at dose levels of 0.1 - 2.5 mg/kg/day.

Mice: Developmental NOEL greater than 25 mg/kg/day (highest dose tested), even though severe maternal toxicity was observed at this dose.

Rabbit: Maternal and developmental NOEL = 81 mg/kg/day.

REPRODUCTIVE TOXIN: Chlorpyrifos is not considered to be a reproductive toxin.

Rats: No adverse reproductive effects were observed in a 3-generation dietary study (high dose 1.0 mg/kg/day).

MUTAGENICITY: Chlorpyrifos is not considered to be a mutagen. Results of several mutagenicity studies were negative, e.g. Ames test, Chinese hamster ovary cell mutation assays, micronucleus assay for chromosomal aberrations, in vitro chromosomal aberration assay with and without enzymatic activation and unscheduled DNA synthesis assay.

COMMENTS: See Section 16 for definition of EPA FIFRA toxicity categories.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: No data available.

ECOTOXICOLOGICAL INFORMATION: This material is toxic to fish and other wildlife. Do not apply directly to water or contaminate water when disposing of equipment washwater or disposal of waste.

13. DISPOSAL CONSIDERATIONS

FOR LARGE SPILLS: Material collected that cannot be reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.

PRODUCT DISPOSAL: The Solaris Group is committed to responsible environmental practices and recommends that all of the product be used up, carefully following all label directions and precautions.

If necessary to dispose of partially filled product container, then securely wrap it in several layers of newspaper and discard in trash.

EMPTY CONTAINER: Do not reuse container. Rinse thoroughly before discarding in trash.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Not Regulated - See Comments In This Section For Size Restrictions.

PRIMARY HAZARD CLASS/DIVISION: None

UN/NA NUMBER: NONE

PACKING GROUP: NO

U.S. SURFACE FREIGHT CLASS: Insecticides, Fungicides, Insect or animal repellents or vermin exterminators, NOI, Other than poison

MARINE POLLUTANT #1: Chlorpyrifos (Severe Marine Pollutant)

AIR (ICAO/IATA)

PROPER SHIPPING NAME: Consumer Commodity

SPECIAL SHIPPING NOTES: The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

COMMENTS: RQ for Chlorpyrifos is 1 Lb. Some shipping configurations of this product may meet or exceed the RQ limit. If shipment meets or exceeds RQ, proper shipping name will be "Consumer Commodity, ORM-D, RQ (Chlorpyrifos)".

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA				
ACUTE: YES	CHRONIC: NO	FIRE: NO	REACTIVITY: NO	PRESSURE GENERATING: NO

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: 1 Lb. of Chlorpyrifos

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA REGULATORY: All non FIFRA regulated components are on the US EPA's TSCA Inventory List.

STATE REGULATIONS

PROPOSITION 65 STATEMENT: Not listed

16. OTHER INFORMATION

HMIS CODES

FIRE: 0 HEALTH: 1 REACTIVITY: 0 PROTECTION: -

NFPA CODES

FIRE: 0 HEALTH: 1 REACTIVITY: 0 SPECIAL: -

APPROVAL DATE: 12/06/1996

REVISION SUMMARY New MSDS

MANUFACTURER SUPPLEMENTAL NOTES: EPA FIFRA (Federal Insecticide, Fungicide and Rodenticide Act) Toxicity Categories: The EPA toxicity categories are based on the results of the acute toxicology studies. The toxicology findings are compared to the FIFRA criteria to determine the product label signal word, precautionary and first aid statements. The EPA FIFRA toxicity category summary:

EPA FIFRA Product Label Toxicity Rating
Toxicity Category Signal Word

I DANGER Most toxic and irritating
II WARNING
III CAUTION
IV CAUTION Least toxic and irritating

COMMENTS: For additional information concerning this product, call the SOLARIS Groups Consumer Helpline at 800-225-2883.

MANUFACTURER DISCLAIMER: This Material Safety Data Sheet (MSDS) contains health, safety and environmental information for you and your employees. It does not replace the precautionary language, use directions, or the storage and disposal information found on the product label. Information contained in this MSDS will help you to prepare for emergency response and to meet community right-to-know, emergency response and reporting requirements under SARA Title III and many other laws. Emergency response agencies and health care providers will also find this additional information useful.

Use of this product is regulated by the U.S. Environmental Protection Agency (EPA) through the approved label copy. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company and The Solaris Group make no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determinations as to its suitability for their purposes prior to use. In no event will Monsanto Company or The Solaris Group be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. **NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.**